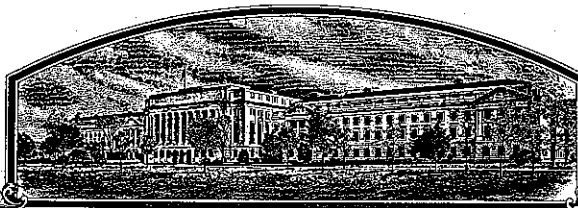


No.



9600038

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Minnesota Agricultural Experiment Station

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED, PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR PROPAGATING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR USING IT FOR ANY OF THE ABOVE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN WITNESS WHEREOF, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirty-first day of December in the year of our Lord one thousand nine hundred and ninety-six.

STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'Glacier'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirty-first day of December in the year of our Lord one thousand nine hundred and ninety-six.

Attest:

Marska A. Hunter
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

W. H. H. H.
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE DIVISION - PLANT VARIETY PROTECTION OFFICE

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a).

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions and information collection burden statement on reverse)

1. NAME OF APPLICANT(S) (as it is to appear on the Certificate) Minnesota Agricultural Experiment Station		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER M87-731	3. VARIETY NAME Glacier
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) University of Minnesota 220 Coffey Hall 1420 Eckles Avenue St. Paul, MN 55108		5. TELEPHONE (include area code) 612-625-4211	FOR OFFICIAL USE ONLY PVPO NUMBER 9460038 DATE NOVEMBER 6, 1995 FILING AND EXAMINATION FEE \$2325.00 + \$125.00 DATE 11/06/95 - 12/06/95 CERTIFICATION FEE \$500.00 DATE Dec. 9, 1995
		6. FAX (include area code) 612-625-0286	
7. GENUS AND SPECIES NAME Glycine max	8. FAMILY NAME (Botanical) Leguminosae		
9. CROP KIND NAME (Common name) Soybean			
10. IF THE APPLICANT NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) (Common name) State Agricultural Experiment Station			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION		12. DATE OF INCORPORATION	
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS J.H. Orf Department of Agronomy and Plant Genetics, 411 Borlaug Hall University of Minnesota 1991 Upper Buford Circle St. Paul, MN 55108			14. TELEPHONE (include area code) 612-625-8275
			15. FAX (include area code) 612-625-1268
16. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)			
a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of the Variety d. <input type="checkbox"/> Exhibit D. Additional Description of the Variety e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Applicant's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties verification that tissue culture will be deposited and maintained in a public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$2,450), made payable to "Treasurer of the United States" (Mail to PVPO)			
17. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY, AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act?) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO			
18. DOES THE APPLICANT SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		19. IF "YES" TO ITEM 18, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? XX FOUNDATION 3 generations 11 Dec. 1996 <input type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED	
20. HAS THE VARIETY OR A HYBRID PRODUCED FROM THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO U.S.A. February 15, 1995 11 Dec. 1996			
21. The applicant(s) declare that a viable sample of basic seed of the variety will be furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF APPLICANT (Owner(s)) Michael V. Martin		SIGNATURE OF APPLICANT (Owner(s))	
NAME (Please print or type) Michael V. Martin		NAME (Please print or type)	
CAPACITY OR TITLE Dean	DATE 11-20-95	CAPACITY OR TITLE	DATE

Exhibit A

Origin and Breeding History of Glacier Soybean

'Glacier' soybean traces to the F_4 progeny of a F_3 plant harvested from a population that had been advanced by a modified single seed descent procedure from the cross McCall x Altona. Bulk seed of the F_4 row was designated M87-731 and was used for yield testing in the F_5 (1988). Subsequent tests of strain M87-731 were conducted in Minnesota in the F_6 (1989) and F_7 (1990). In the F_7 generation 50 typical plants were harvested individually to initiate purification for observable traits including reaction to several races of phytophthora root rot. In the F_8 (1991) M87-731 was entered in the maturity group 00 Regional Soybean Test. In 1991 twenty-nine rows were grown for purification purposes. Seventeen rows appeared uniform for plant and seed characteristics including reaction to race 4 of phytophthora root rot, therefore seed of these rows were bulked to provide breeder's seed. In the F_9 (1992), F_{10} (1993) and F_{11} (1994) M87-731 continued to be tested in the Uniform Regional Soybean Test Maturity Group 00. In the F_9 (1992) a small increase of breeders seed was made. In the F_{10} (1993) Foundation seed was produced by the Minnesota Foundation Seed Organization. In 1994 Foundation seed was shared with other states for increase. In the F_{11} (1994) seed was increased and M87-731 was approved for release as Glacier. On February 15, 1995 seed of Glacier was released to growers in Minnesota and North Dakota. No off type variants were noted in the seed multiplication process of Glacier over three generations. This variety breeds true and meets certification standards.

Exhibit B

Novelty Statement

'Glacier' soybean is most similar to 'Agassiz' soybean. Glacier is approximately three days earlier in maturity than Agassiz. The yield of Glacier is about 2% less than Agassiz. Glacier is about one inch shorter than Agassiz. Seed of Glacier is about 2.4 grams per 100 seed larger than seed of Agassiz. Glacier has about 0.4 percent lower protein and 0.4 percent lower oil than Agassiz. Glacier has tawny pubescence while Agassiz has gray pubescence. Seed of Glacier has yellow hila while seed of Agassiz has bluff hila. Glacier carries the Rps6 gene for phytophthora root rot resistance while Agassiz carries the Rps1 gene for phytophthora resistance.

Data comparing Glacier and Agassiz is taken from the Uniform Test 00, Northern States 1991-1994 (a total of 25 tests for most traits).

Variety	Date mature	Yield bu/a	Height inches	Lodging score	Seed Quality score	Seed Size g/100	Protein %	Oil %
Glacier	9/14	35.5	29	1.8	1.9	15.5	40.3	19.1
Agassiz	9/17	36.4	30	1.3	1.9	13.1	40.7	19.1

U.S. DEPARTMENT OF AGRICULTURE
 AGRICULTURAL MARKETING SERVICE
 LIVESTOCK, MEAT, GRAIN & SEED DIVISION
 PLANT VARIETY PROTECTION OFFICE
 BELTSVILLE, MARYLAND 20705

EXHIBIT
 (Soybean)

OBJECTIVE DESCRIPTION OF VARIETY
 SOYBEAN (*Glycine max* L.)

NAME OF APPLICANT(S) Minnesota Agricultural Experiment Station	TEMPORARY DESIGNATION M87-731	VARIETY NAME Glacier
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) University of Minnesota 220 Coffey Hall, 1420 Eckles Avenue St. Paul, MN 55108		FOR OFFICIAL USE ONLY PVPO NUMBER 9600038

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g.,). Starred characters ★ are considered fundamental to an adequate soybean variety description. Other characters should be described when information is available.

1. SEED SHAPE:



1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)
 3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)

2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)
 4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

★ 2. SEED COAT COLOR: (Mature Seed)

1 = Yellow

2 = Green

3 = Brown

4 = Black

5 = Other (Specify) _____

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

1 = Dull ('Corsoy 79'; 'Braxton')

2 = Shiny ('Nebsoy'; 'Gasoy 17')

★ 4. SEED SIZE: (Mature Seed)

Grams per 100 seeds

★ 5. HILUM COLOR: (Mature Seed)

1 = Buff

2 = Yellow

3 = Brown

4 = Gray

5 = Imperfect Black

6 = Black

7 = Other (Specify) _____

★ 6. COTYLEDON COLOR: (Mature Seed)

1 = Yellow

2 = Green

★ 7. SEED PROTEIN PEROXIDASE ACTIVITY:

1 = Low

2 = High

★ 8. SEED PROTEIN ELECTROPHORETIC BAND:

1 = Type A (SP1^a)

2 = Type B (SP1^b)

★ 9. HYPOCOTYL COLOR:

1 = Green only ('Evans'; 'Davis')

2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')

3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')

4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

★ 10. LEAFLET SHAPE:

1 = Lanceolate

2 = Oval

3 = Ovate

4 = Other (Specify) _____

11. LEAFLET SIZE:

☒ 21 = Small ('Amsoy 71'; 'A5312')
3 = Large ('Crawford'; 'Tracy')

2 = Medium ('Corsoy 79'; 'Gasoy 17')

12. LEAF COLOR:

☒ 21 = Light Green ('Weber'; 'York')
3 = Dark Green ('Gnome'; 'Tracy')

2 = Medium Green ('Corsoy 79'; 'Braxton')

★ 13. FLOWER COLOR:

☒ 2

1 = White

2 = Purple

3 = White with purple throat

★ 14. POD COLOR:

☒ 2

1 = Tan

2 = Brown

3 = Black

★ 15. PLANT PUBESCENCE COLOR:

☒ 2

1 = Gray

2 = Brown (Tawny)

16. PLANT TYPES:

☒ 21 = Slender ('Essex'; 'Amsoy 71')
3 = Bushy ('Gnome'; 'Govan')

2 = Intermediate ('Amcor'; 'Braxton')

★ 17. PLANT HABIT:

☒ 3

1 = Determinate ('Gnome'; 'Braxton')

3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

2 = Semi-Determinate ('Will')

★ 18. MATURITY GROUP:

☒ 0 ☒ 21 = 000
9 = VI2 = 00
10 = VII3 = 0
11 = VIII4 = I
12 = IX5 = II
13 = X

6 = III

7 = IV

8 = V

★ 19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

BACTERIAL DISEASES:

★

☒ 0Bacterial Pustule (*Xanthomonas phaseoli* var. *sojensis*)

★

☒ 0Bacterial Blight (*Pseudomonas glycinea*)

★

☒ 0Wildfire (*Pseudomonas tabaci*)

FUNGAL DISEASES:

★

☒ 0Brown Spot (*Septoria glycines*)Frogeye Leaf Spot (*Cercospora sojina*)

★

☒ 0

Race 1

☐ Race 2☐ Race 3☐ Race 4☐ Race 5☐ Other (Specify)☒ 0Target Spot (*Corynespora cassicola*)☒ 0Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)☒ 0Powdery Mildew (*Microsphaera diffusa*)

★

☒ 1Brown Stem Rot (*Cephalosporium gregatum*)☒ 0Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)

19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

FUNGAL DISEASES: (Continued)

- ★ Pod and Stem Blight (*Diaporthe phaseolorum* var. *sojae*)
- Purple Seed Stain (*Cercospora kikuchii*)
- Rhizoctonia Root Rot (*Rhizoctonia solani*)
- Phytophthora Rot (*Phytophthora megasperma* var. *sojae*)
- ★ Race 1 Race 2 Race 3 Race 4 Race 5 Race 6 Race 7
- Race 8 Race 9 Other (Specify) _____

VIRAL DISEASES:

- Bud Blight (Tobacco Ringspot Virus)
- Yellow Mosaic (Bean Yellow Mosaic Virus)
- ★ Cowpea Mosaic (Cowpea Chlorotic Virus)
- Pod Mottle (Bean Pod Mottle Virus)
- ★ Seed Mottle (Soybean Mosaic Virus)

NEMATODE DISEASES:

- Soybean Cyst Nematode (*Heterodera glycines*)
- ★ Race 1 Race 2 Race 3 Race 4 Other (Specify) _____
- Lance Nematode (*Hoplolaimus Colombus*)
- ★ Southern Root Knot Nematode (*Meloidogyne incognita*)
- ★ Northern Root Knot Nematode (*Meloidogyne Hapla*)
- Peanut Root Knot Nematode (*Meloidogyne arenaria*)
- Reniform Nematode (*Rotylenchulus reniformis*)
- OTHER DISEASE NOT ON FORM (Specify): _____

20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- ★ Iron Chlorosis on Calcareous Soil
- Other (Specify) _____

21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- Mexican Bean Beetle (*Epilachna varivestis*)
- Potato Leaf Hopper (*Empoasca fabae*)
- Other (Specify) _____

22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape	Agassiz	Seed Coat Luster	Agassiz
Leaf Shape	Agassiz	Seed Size	Ozzie
Leaf Color	Agassiz	Seed Shape	Ozzie
Leaf Size	Agassiz	Seedling Pigmentation	Ozzie

23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

9600038

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/POD
				CM Width	CM Length	% Protein	% Oil		
Glacier Submitted	120	1.8	74	7.2	11.0	40.3	19.1	15.5	2.4
Agassiz Name of Similar Variety	123	1.3	76	6.8	11.3	40.7	19.5	13.1	2.5

PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A₂ in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.

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Exhibit E

Statement of the Basis of Ownership

The Minnesota Agricultural Experiment Station is the owner of Glacier soybean. The Minnesota Agricultural Experiment Station of the University of Minnesota is the employer of the breeder who developed Glacier.